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GLOBAL Climate Change




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GLOBAL Climate Change



**It's About
Our Environment,
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Climate Change – It's More Than a Lot of Hot Air

Climate change has been called the most significant environmental issue the world has ever faced, and with good reason. Forecasts show that a continued warming of the earth's temperature could trigger a wide range of changes in our climate – changes that could have consequences for our environment, our health, our economy and our children's future.


Canada needs to be part of the climate change solution. Along with other nations around the world, we need to take action to slow climate change and find ways to adapt to changes that are likely to occur as a result of warmer temperatures.

What Do We Know About Climate Change?

Scientists around the world have been studying climate change for more than a decade, and most have come to conclusions that support immediate action.

We know that our atmosphere is a complex mixture of gases that trap the sun's heat near the earth's surface, similar to how the glass of a greenhouse traps the sun's warmth. Without these "greenhouse" gases, the sun's heat would escape and the average temperature of the earth would be 33 degrees cooler (-18°C) – too cold to support life as we know it.

We also know that for thousands of years the earth's atmosphere has been in balance, keeping temperatures at the right level for humans, animals and plants to survive. But that balance is



changing, probably because human activities are adding a lot more greenhouse gases to the atmosphere. Heating and cooling buildings, using energy at home and work, driving vehicles to move people and goods, powering industrial processes – everything we do that consumes energy contributes to the problem.

Canada is not alone. Greenhouse gases are produced all over the world. More and more of these gases are being created and trapped in the atmosphere. Temperatures are rising and it is the speed of change that is causing such concern.

Our climate is Changing

- The 1980s and 1990s are the warmest decades on record.
- The 10 warmest years in global meteorological history have all occurred in the past 15 years.
- The 20th century has been the warmest globally in the last 600 years.

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"There is a clear upward trend in average global surface temperatures that would indicate a change in climate. This is increasingly hard to explain on the basis of natural changes alone. There is a high probability that a lot of the changes we see around us ... are caused by human-induced changes to our climate."

– Dr. Henry Hengeveld, climate change scientist
Government of Canada




What Could Climate Change Mean for Canada?

Canadian scientists have developed one of the most advanced climate models in the world to determine how climate would change. The results of these models have been used to determine how climate change could affect us. These are some of their findings to date:

- As temperatures increase, sea levels could rise around the world. Buildings, roads and sewage systems in low-lying coastal regions could be threatened by flooding and erosion.
- There are important health implications to climate change. A large number of cities in Canada could expect a significant increase in the number of very hot days, which can cause or intensify respiratory problems for many Canadians. The quality and the quantity of drinking water might decrease as water sources are threatened by drought.
- Harsh weather conditions, such as heat waves and floods, could be more frequent and more severe.
- Canada's forests could be at risk. A warmer climate could allow pests and diseases to migrate north and add stress to our forests. These same forests would become drier and more likely to catch fire.
- Warmer temperatures and changes in moisture levels could also affect plant and animal life in Canada. If these changes occur too quickly, many species may not have time to adjust.

The bottom line is this: although warmer temperatures may appeal to some Canadians, rising temperatures will come at significant costs.




Research is Answering Climate Change Questions

Climate change is a complex, rapidly evolving and enormous field of scientific study and a major focus of research in the Government of Canada. Canadian researchers are currently working to:

- recognize the difference between natural and human-made change;
- identify the sources of greenhouse gases, as well as “sinks” (ecosystems, such as the oceans, forests and soils, that remove and store carbon from the atmosphere);
- develop computer models that accurately portray how climate systems work and how human activities influence them;
- understand the effects of climate change on our environment, economy, health and society; and
- develop technologies and practices to reduce greenhouse gas emissions.

4 Canadian scientists are recognized as world leaders. They are studying adaptation measures and strategies for Canada. Our climate may already be changing because of the existing buildup of greenhouse gases in the atmosphere, and we must be prepared to adapt to those changes. One example of such an adaptation measure was the decision to take into account the potential rise in sea level due to climate change when designing and building the Confederation Bridge between Prince Edward Island and New Brunswick.

The *Canada Country Study* is the first-ever assessment of the social, biological and economic impacts of climate change on the different regions



of Canada. Climate experts from government, industry, academia and non-government organizations were brought together to review existing knowledge on climate change impacts and adaptation, identify gaps in research, and suggest priority areas where new knowledge is urgently needed.

What are the GREENHOUSE GASES?

There are six greenhouse gases covered under the Kyoto Protocol—carbon dioxide (CO₂), methane, nitrous oxide, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). Of these six gases, three are of primary concern because they are closely associated to human activities.

Carbon dioxide, or CO₂, is the most important of the greenhouse gases released by human activities. It is the main contributor to climate change – especially through the burning of fossil fuels.

Methane is produced naturally when vegetation is burned, digested or rotted without the presence of oxygen. Large amounts of methane are released by garbage dumps, rice paddies and grazing cattle.

Nitrous oxide occurs naturally in the environment but human activities are increasing the quantities. Nitrous oxide is released when chemical fertilizer is used in agriculture.

Canada Responds to a Global Problem

In Kyoto, Japan, in December 1997, Canada joined some 160 nations in agreeing to take action on climate change. The Kyoto Protocol is a global response to a global problem – an important step in plans to reduce the buildup of greenhouse gases in the earth's atmosphere.

Canada's commitment under the Kyoto Protocol is to reduce our greenhouse gas emissions to six percent below 1990 levels by the period between 2008 and 2012. In reality, this will require a 25 percent drop in emissions from "business as usual" projections.

This won't be easy. It will require major changes in the way we produce and use energy at home, at work and on the road. Reducing greenhouse gas emissions protects the environment, our health and improves our air quality. Achieving our Kyoto targets will also foster the development of innovative technologies that will lead to new economic opportunities.

Meeting the Kyoto Target: A National Process and Strategy

Using a pragmatic, step-by-step approach, the Government of Canada is working with interested parties and stakeholders – including provincial, territorial and municipal governments, industry, environmental groups, scientists, the business community and individual Canadians – to build a national strategy for meeting our Kyoto commitments.



Sixteen "Issue Tables" are engaging some 450 experts from across the country in examining the impacts, costs and benefits of achieving our Kyoto targets. The Issue Tables are also developing and analysing various options open to Canada for meeting its commitments, and will make recommendations for a national implementation strategy.

Through this transparent and inclusive consultative process, Canadians have access to the best advice possible. By thinking globally and acting locally, adopting innovative practices and collaborating across jurisdictions, industrial sectors and regions, Canada will achieve its goal.

Climate Change Action Fund

The Climate Change Action Fund (CCAF) was established by the federal government in 1998 to help Canada meet its commitments under the Kyoto Protocol. The CCAF supports early actions to reduce greenhouse gas emissions as well as efforts to increase understanding of the impacts, costs and benefits of the Protocol's implementation and various implementation options open to Canada.

The CCAF will receive \$150 million over three years. The Fund is also sparking significant private sector and other government funding, allowing it to make the most of opportunities to lessen the impacts of climate change.

The CCAF has four components:

- *The Public Education and Outreach component supports projects that build public awareness and understanding of climate change and promote actions to reduce greenhouse gas emissions.*
- *The Science, Impacts and Adaptation component supports further research to advance our knowledge of the magnitude, rate and regional distribution of climate change and its impact on Canada so we can better estimate the risks of climate change. It also supports research on adaptation to these changes.*
- *The Technology Early Action Measures component of the CCAF supports cost-effective technology projects that will lead to significant reductions in greenhouse gas emissions.*
- *The Foundation Analysis component supports sound analysis of options to meet Canada's Kyoto commitments.*



A Role for Canada and Canadians

In one way or another, all Canadians – governments, businesses, organizations and individuals – contribute to greenhouse gas emissions. We're all part of the problem, and we can all be part of the solution. One of the challenges shared by all sectors of society is to improve our use of energy.

Progress has already been made in reducing Canada's greenhouse gas emissions.

The Government of Canada is showing leadership by its own commitment to reduce greenhouse gas emissions from federal operations by 20 percent over 1990-2005.

Canadian businesses are also taking steps to become more energy-efficient, often with support from government information and awareness programs. Hundreds of these companies, such as Simmons Canada Inc., E.B. Eddy Forest Products, General Motors of Canada Ltd., and Dofasco Inc., have filed action plans with the Voluntary Challenge and Registry (VCR) Inc., an organization whose mandate is to encourage all sectors of the economy to voluntarily limit or reduce greenhouse gas emissions.

Across Canada, organizations and local communities are taking action on climate change. Home energy audits, ride-sharing, and tree planting programs are just some of the community-based solutions to climate change.

Actions by individual Canadians and families are also an essential part of the climate change solution. Making a commitment to improve our use of energy at home, at work and on the road will result in significant reductions in greenhouse gas emissions. It's a matter of making

lifestyle choices that reduce energy consumption and get the most out of the energy we use. Here are some practical steps you can take today:

At Home

- Use caulking and weatherstripping to reduce air leakage around windows, doors and baseboards. Air leakage causes your furnace and air conditioner to work harder and use more energy.
- Reduce temperature settings to 18°C when you go to bed or to 16°C when you leave the house for the day or longer – or install a programmable thermostat to do the job for you.
- Check the EnerGuide label when purchasing a new household appliance – a new refrigerator may use only half as much energy as your current model.

At Work

- Turn energy-using equipment off when it is not in use, including computers, photocopiers, cash registers, coffee makers and industrial machinery.
- Use as little paper as possible. Printing, photocopying and faxing all use energy. Communicating electronically is quicker, less expensive and better for the environment. When you use paper, make sure you recycle.
- Turn off lights when a work area is not being used. In areas where lighting is not always necessary, don't turn them on in the first place. Natural light saves energy and is easier on the eyes.

On the Road

- Taking care of your vehicle will make it last longer, burn less fuel and produce fewer emissions. A poorly tuned engine can use up to 50 percent more fuel and produce up to 50 percent more emissions than one that runs properly.

- Avoid idling! Restarting your engine uses less fuel than 10 seconds of idling and reduces greenhouse gas emissions.
- When buying a new car, purchase the most fuel-efficient vehicle that meets your needs. Check the EnerGuide label on all new vehicles for fuel consumption information.
- Active forms of transportation such as walking, cycling or in-line skating help reduce greenhouse gas emissions and promote good health. You can also reduce emissions by using public transit or by ride-sharing with neighbours or co-workers when you can.



Energy Efficiency – Good for the Environment and the Economy

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Conserving energy not only cuts greenhouse gas emissions, it's also good for the economy:

- *It means more money in our pockets because we will be spending less on energy to operate our homes, vehicles and businesses.*
- *Energy efficiency also makes Canadian companies more competitive by lowering their operating costs.*
- *There is a growing industry that is helping families and businesses become more energy-efficient – an industry that is providing jobs for thousands of Canadians.*
- *The challenge of reducing greenhouse gas emissions will create opportunities to develop new technologies and processes for markets in Canada and around the world.*

Getting Started

We can all be part of the climate change solution. Find out whether your community has a climate change action program and how you can get involved. Make a personal commitment to live a more energy-efficient lifestyle at home, at work and on the road.

For more information on climate change and the actions you can take, call 1-800-959-9606 or visit the following Government of Canada web sites:

- the Government of Canada's main climate change site: <http://www.climatechange.gc.ca>
- Natural Resources Canada's Office of Energy Efficiency: <http://oee.nrcan.gc.ca>
- Environment Canada's Green Lane: <http://www.ec.gc.ca>
- Health Canada: <http://www.hc-sc.gc.ca> (click on "Healthy living")
- Transport Canada: <http://www.tc.gc.ca>



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